

eastern half of the city were stripped of fruit buds and foliage, and plants, flowers and vegetables were crushed to the ground.

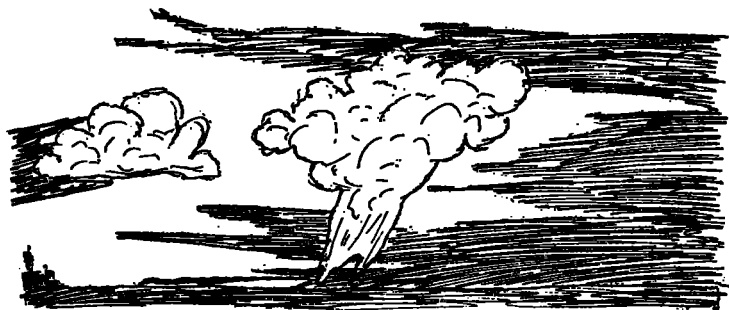
Prof. James A. Merrill, of the Manual Training High School of this city, informed the writer that he found one hailstone showing 11 concentric layers.

The accompanying picture is a copy of a photo made by a Kansas City man of hailstones that fell in the great storm of May 14, 1898. I had a negative made from the old photo, from which this print was made. The hailstones were placed on a brown cloth, the ground being covered with hail, together with two large hen eggs, each showing a small cross in order to show by contrast the size of the hailstones.

[A half-dozen of the principal losses alone totaled over \$17,000.]-P. Connor.

FUNNEL CLOUD OVER LAKE MICHIGAN, JUNE 29, 1920.

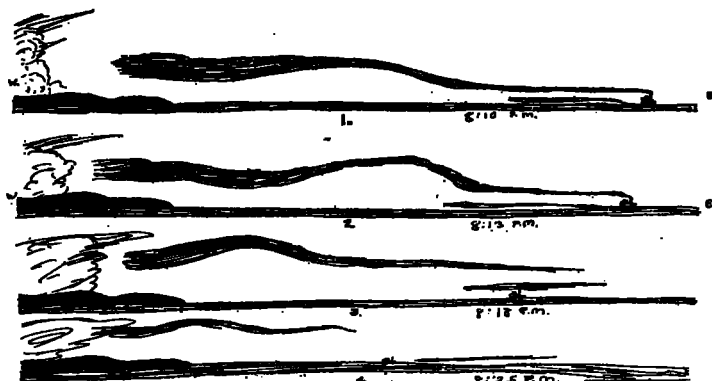
The cloud in the accompanying sketch was seen over Lake Michigan, on looking north from Chicago, at 7:08 p. m. (local summer time), June 29, 1920. The point of the cloud was actually considerably lower than the bulging top, and the drawing shows it as well as I



could represent it. No rotary motion was noticed in connection with the cloud. It changed shape rapidly, and by 7:13 had disappeared. A thundershower of moderate intensity followed within five minutes.—Allen H. Ward. This cloud probably marked a vortex which with but little further development would have made a waterspout.—C. F. B.

A SMOKE ARCH MARKING AN INCREASE IN WIND.

The sketch, which was made looking north from Chicago on the evening of August 6, 1920, shows a curious curve in a streak of smoke from a small steamer. A thunderstorm was approaching from the west, though it was still some distance away; and the wind was light



(Local Summer Time)

to gentle east to southeast. The curve was first noticed at 8:10 p. m., but became most pronounced three minutes later, with little change in position. By 8:18 it had moved westward considerably. It then began to fade away, and was last seen at 8:25, being then partly over land. At Chicago, the east wind shifted to southeast and increased from light to moderate about 15 minutes after the smoke had disappeared.—Allen H. Ward.

SOME FLYING EXPERIENCES IN "BUMPY" WEATHER IN TEXAS.

By D. P. CARLBERK.

[Excerpts from a letter to the Editor, Jan. 20, 1920.]

Entering Barron Field, Everman, Tex., as a cadet I flew there till I was commissioned and thereafter till I was ordered to Post Field in September. Having been both a cadet and an officer through a Texas summer I feel that I am quite familiar with most of the conditions treated in your article.¹

The "bump" that worried me most was that kind I always thought of as a slender shaft of upcurrent. The big ones lift the whole ship but those wicked little ones kick one wing so sharply and so suddenly, I wondered whether I would ever get to the point where they would not scare me.

After a pilot gets to the place where he is accustomed to the roar of the motor, and the whistling of the wind through the wires, he can hear new sounds, and the contact of those upshoots—the "slender" ones—with the wing surface can actually be heard. It sounds as if someone under your wing had taken a hand full of sand and thrown it up against the wing—kind of a "biff" with a soft hiss to it.

One very hot day I was on a long cross-country flight. Fifteen miles south of Midlothian, Tex., I ran into a mess of "bumps" that were far worse than usual. I sat up and gave attention to the stick when suddenly a big fellow took me in charge—lifted me up about 500 feet and, regardless of my efforts and the power of the "Hispy," swiftly turned the whole ship completely around so that I started back toward the town. The twist seemed to come at the top of the current. I experienced the same twist on two different occasions after that. I could never understand it, unless it so happened by there being two large upcurrents side by side and as their overflows met at the top the twist was created, and that I was caught or tossed to one side, as I reached the top, and there met the twist (between the two "bumps").²

The height of "bumpiness" on any particular day does not remain constant. One day I flew for an hour at 5,000 feet. There was not a suggestion of a "bump" above 3,000 feet. When I landed, a pilot, ready to go up, asked me about the air. I had just landed so told him there was perfect air anywhere above 3,000 feet. I happened to be on the line when he came down and he told me that he had gone at once to 5,000 feet and the whole area was covered with "bumps."

Here is a peculiar thing which you doubtless will understand at once but was ever strange to me. It happened a half dozen times at Barron Field.

We always like to fly best in the early morning hours for the air was always good, but if that high, hot, wind—

¹ "Effect of winds and other conditions on the flight of airplanes, MONTHLY WEATHER REVIEW, August, 1919, 47: 523-532.

² Upcurrents are frequently strongly rotational (especially in dust whirls), so only one convective column would be sufficient to cause Mr. Carlberk's experience.—C. F. B.